

# Virginia Wildlife

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# Virginia Wildlife

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Wildlife and Related Natural Resources

COMMONWEALTH OF VIRGINIA  
JOHN N. DALTON, GOVERNOR

Commission of Game and Inland Fisheries

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COVER: Wood Ducks, by Diane Higgason, Aylett, Virginia



# Editorial

## NATIONAL HUNTING AND FISHING DAY

Since its debut in 1972, NHF Day has developed into one of the most widely accepted and most effective means of promoting the conservation effort and the sportsman's role in conservation. NHF Day from its beginning has enjoyed outstanding support and has grown steadily in its scope and impact. From the early open-house affairs at gun clubs to the professionally organized programs at shopping centers, NHF Day has kept pace with the job it has to do.

Ron Guidry, New York Yankee pitching star and baseball's best pitcher in 1978, will also be making a pitch for the sportsman's role in conservation this year in his role as Honorary Chairman of National Hunting & Fishing Day, September 22, 1979.

Nearly as well known for his avid pursuit of the hunting and fishing sports as he is for his accomplishments on the pitcher's mound, Guidry announced that he was proud to have the opportunity to serve as spokesman for the nation's sportsmen-conservationists.

Today it is more important than ever that the nation's sportsmen have a nationally recognized platform from which to spread the word about their leading role in conservation. NHF Day provides that platform.

NHF Day lets the public in general know of the work sportsmen have done. It shows how they have been, for the past 80 years, the leaders in a constant, and for the

most part, successful struggle to conserve and manage our natural resources, wildlife and wild places. Thanks to the foresight and fortitude of these Americans, hunting and fishing remain possible and acceptable in our modern society. As long as there are wild places, there will be a need to guard them. As long as there is wildlife, there will be a need to manage it wisely.

September 22, 1979, will mark the eighth annual observance of National Hunting and Fishing Day, requested by Congress in 1972 as a way to recognize the nation's sportsmen for their contributions. Since that first observance, the day has grown steadily in its size and impact. Millions of Americans now participate in an estimated 2,500 separate NHF Day activities each year. According to Honorary Chairman Guidry, "Through programs at sportsmen's clubs and shopping centers, lectures and poster contests in schools, and special stories in newspapers and magazines, National Hunting and Fishing Day has helped to show millions of Americans another side of hunting and fishing—the conservation side."

Check your local paper for information about a National Hunting and Fishing event in your area. If you find one, drop by for a visit. They're interesting and fun.

Additional information on National Hunting and Fishing Day is available from NHF Day, 1075 Post Road, Riverside, CT 06878.—HLG

# Letters

## PRAISE FOR THE CALENDAR

As much as I enjoy your magazine, I enjoy the *Sportsman's Calendar* more! You are all doing a wonderful job — my congratulations and thanks.

Col. Robert McKenna  
Colonial Heights

My husband and I certainly enjoy your *Sportsman's Calendar*! We gave it to several friends who all loved it. We also see it in our local barber shop, so we know how popular it is among wildlife lovers. Thanks very much for a job well done.

Mrs. John F. Baker  
Bedford

## AGREE WITH THE EDITOR

Bravo on your editorial reply to Mr. Larry C. Gross in the July issue. Your fairness in your reply exemplifies the fine job you and your staff do with *Virginia Wildlife*. Keep up the good work.

Jerry L. Smith  
Editor, *Military Outdoors*  
Fort Monroe

## SNAKE-OPOLY FAN

As a teacher, I would highly recommend that the "Snake-opoly" article be made available as a reprint. It is a very valuable teaching tool in making more facts know about snakes both to children and the general public.

Betsy Blizard  
Charlottesville

*We received many comments along this line and we do plan in the near future to make "Snake-opoly" available as a reprint.—Asst. Editor*

## WHAT IS IT?

I found this growing in an area of pines that are 15 years old. What it appears to be is a pine that has been cut and is putting out new growth. Any comments?

Clarence M. Cole  
Hampton



Gene Osborne of the Virginia Division of Forestry thinks this is a short-leaf pine. This type of sprouting is rather common. The sprouts develop rapidly, having a large root system to draw on.—Editor

# SCULPINS

by Paul Bugas

**T**he streams and rivers of western Virginia harbor a wide variety of fish, ranging from many species of minnows to gamefish such as trout, bass, and muskellunge. One of the smaller residents of these streams is the sculpin (family Cottidae). Although sculpin is generally recognized as the common name for this fish, local appellations include mud divers, muddlers, and mullheads.

To the unfamiliar eye, one's first encounter with the sculpin is often a mixture of curiosity and unassur-ance. After all, the creature's broad, flattened head and protruding eyes combine to produce a somewhat formidable sight to the novice fisherman. Armed with some background information, though, one can be assured that this common inhabitant of Virginia's highland waters is indeed a harmless, highly interesting animal.

Although the majority of this family has adapted to a marine environment, there are many fresh-water species, as well. Those sculpins that frequent our upland and montane stream systems fall under the genus *Cottus*. These fish prefer the cold, well-oxygenated habitats that support trout and often provide an excellent source of food for these wily gamefish. Additionally, some populations flourish in warm streams and are probably consumed by smallmouth bass. No sculpins are known from ponds or lakes in Virginia.

Several species and subspecies belonging to the genus *Cottus* are distributed in the mountainous areas of the Old Dominion. The banded sculpin, *Cottus carolinae*, and the black sculpin, *Cottus baileyi*, proliferate in the waters of the upper Tennessee River drainage in south-

western Virginia. The slimy sculpin, *Cottus cognatus*, can be found in a few springs and cold creeks of the Potomac-Shenandoah River drainage. This and the Cowpasture River system of the James River drainage are also the home of the recently described Potomac sculpin, *Cottus girardi*. An underscribed form inhabits the upper Tennessee River.

Of all the members of *Cottus* that are found in Virginia waters, the ubiquitous mottled sculpin, *Cottus bairdi*, emerges as the most widely distributed. Located in the montane reaches of the Roanoke, James, Potomac, Rappahannock, and New River drainages, this small fish is a familiar sight to all aquatic biologists and ardent trout fishermen.

The adult mottled sculpin averages four inches (100 mm) in total length, which is a great deal smaller than sizes attained by its marine

**Little-known...and unappealing...  
members of the fish world.**





cousins. Some salt water sculpins grow up to 24 inches (600 mm) in length. *Cottus bairdi* is characterized by its darkly mottled dorsal (back) coloration, hence, its name. The head is large and flat, with the rest of the body tapering from a stout pelvic region to a slender tail area.

The pectoral fins are large and the diminutive pelvic fins are thoracic in position (located near the pectorals, a short distance from the head). The four soft rays of the pelvic fin are helpful in identifying this fish in the field. The dorsal fins run along most of the length of the back, and the first dorsal is red-margined, particularly in breeding males.

The sculpin family's depressed body shape is indicative of their bottom-dwelling nature. They move among the rubble on stream bottoms, preferring riffle stretches with a swift current over the slower moving water in pool areas. The turbulence of the riffles washes assorted insect larvae, nymphs, small fish eggs, and various other aquatic invertebrates within reach of waiting sculpins, providing these fish with a wide array of food.

Spring of the year triggers spawning behavior in most fresh-

water sculpins. Darkly colored males select a nesting site, usually under a rock, submerged log, or other suitable structure. The female then enters the area and, while upside-down, deposits her eggs in a several-layered mass on the ceiling of the site. The eggs possess an adhesive quality that allows them to hold together and stick to an underwater surface. The female then leaves the area and the nest remains under the watchful eye of the male fish. It is the duty of the male to fertilize the eggs and guard them from unwanted intruders. While watching over the nest, he frequently fans the area with his pectoral fins to keep a crucial flow of water circulating around the site. Hatching usually occurs from 3-5 weeks after the eggs have been deposited.

Since the sculpin prefers waters that are inhabited by brook, brown, and rainbow trout, they obviously play an important role in a stream's ecosystem. Studies indicate that sculpins are not voracious predators on the eggs and fry of trout, but it is not uncommon to find a loose trout egg or an occasional young trout included in their diet. As mentioned previously, preferred sculpin foods

appear to consist of primarily aquatic invertebrates.

The stomach contents of adult trout often reveal a preference for sculpins, especially in bigger streams that hold large gamefish. The popularity of using sculpins as baitfish seems to vary regionally. Although it is seldom used in Virginia's trout streams, the sculpin is a popular bait in many of our northern states and in Canada. Years ago, fly fishermen recognized the value of the sculpin as a highly preferred forage fish by trophy size trout. This discovery sparked the impetus for a wide variety of streamers or "muddlers" that have been patterned after this distinctive looking fish.

Research is constantly providing the scientist and the fisherman with valuable information concerning the sculpin as an integral part of our freshwater ecosystems. Special recognition of the genus *Cottus* is warranted, as these fish comprise a large percent of the vertebrates that inhabit the Old Dominion's cold water streams. Perhaps further investigation of the trout-sculpin relationship will reveal information that can be used as an essential tool in the area of cold water fisheries management in the years to come.



# Prescription for a Boating Accident

by Jim Kerrick

What factors increase your chance of becoming another statistic?



No boater wants to be involved in a boating accident. To avoid accidents that damage property and cause injuries, the boater needs to take a closer look at some of the causes of boating accidents and what he can do to prevent them from happening.

The person who kills himself is not a recreational boater, in that he does not think of himself as such. He is a hunter, fisherman, canoeist, and so on.

Coast Guard studies indicate that the sudden drowning syndrome or disappearance within fifteen minutes affects three out of four boating drowning fatalities. The primary parts of this syndrome are (1) cold water under seventy degrees; (2) lack of flotation devices or inappropriate knowledge of their use (only seven percent of available PFD's are used by people falling or thrown into the water) and; (3) overuse of alcohol or similar harmful drugs.

Fatalities are mostly found in smaller boats under 16 feet with no engines or with engines under ten horsepower. The victim's tend to be males in their mid to late thirties who have appreciable experience.

The five major causes of deaths are: (1) Massive heart attacks which are usually found in older out-of-condition, non swimmers who have a fear of the water but do not wear PFD's. (2) Dry drowning where the victim's throat closes due to laryngeal spasms. The victim dies by suffocation but is frequently found floating on the surface and if found in time may be revived. Fifteen percent of water accident fatalities fall within this category. (3) Wet drownings where the victim actually inhales water into the lungs and dies of asphyxiation. (4) Hypothermia or reduction of internal body temperature is due to body heat loss by cold

air or water. One third of all boating fatalities fall in this category. (5) Being struck by a circling boat usually empty from which victim has been thrown has contributed to many fatalities.

To summarize, boating fatalities tend to happen to experienced fresh-water boaters in small low-powered vessels involved in an activity (usually fishing) on cold water or to boaters in powered vessels which cannot be automatically stopped. The victim frequently does not know how to swim, has no PFD available or does not know how to use one properly and has consumed some alcoholic beverages or drug shortly before or while engaged in a water-related activity.

Injuries tend to occur to occupants of boats larger than sixteen feet with appreciable horsepower and moving at high speed. In fatalities, the victim either falls or is thrown from the boat or the boat capsizes. Injuries occur by being tossed about in the boat or by being struck by another vessel. Other injuries occur by striking fixed or underwater obstructions. Collisions are overwhelmingly caused by operator error or inattention, especially at high speed. Operator vision impairment or response after receipt of visual stimulæ are involved in many injury cases.

Stresses such as vibration, glare, exposure to wind and weather, heat, noise and alcohol can in an average boating day (approximately three hours), increase an operator's reaction time to twice that of his normal rested state. This does not take into effect additional fatigue introduced in many sailors trailering their boats many miles before and after a day's boating activity.

Impairment of peripheral vision, frequently a factor in many after dark high speed collisions, is

especially prevalent due to alcohol consumption and operation for a long period involving high in-boat vibration exposure.

Property damage is divided into three causes: (1) fires and explosion; (2) collisions and; (3) flooding. Again, larger craft over 16 feet with high-powered inboard engines are usually involved. The basic reason for this is obvious. In the larger more expensive powered craft flooding is less likely to involve operator error. But long standing failure to inspect the craft on a routine basis can be laid to the operator or owner as a primary contributing factor.

Fires and explosions almost wholly involve boats with inboard engines and/or with installed covered fuel spaces. Leaks around the fuel tanks and lines or tubing due to vibration, poor maintenance, corrosion and age of the vessel cause fires and explosions. Electrical insulation in fuel storage areas also contribute.

Most explosions occur during or immediately after fueling when gasoline vapors are likely to be trapped and accumulated in spaces exposed to spark — producing electrical equipment. The primary cause of collisions is operator error. Many vessels may have structural or design aspects which tend to hide or obscure areas from the operator's view. Case in point: the view immediately forward of the bow of larger cabin cruisers is frequently obscured during the time the hull comes up to plane and in some instances during normal cruising operation.

Flooding normally occurs as the result of a vessel's being holed by a collision or striking a floating or fixed object. Hull fittings that are below the waterline, frequently through failure to conduct periodically checks cause flooding due to wear and age.



# Quoth the Raven...

# Never more!

There is  
evidence that this  
bird has a life span  
that can stretch to  
200 years!



by A. L. Jones

Illustration by Dick Bernard

When I was a graduate student at the University of Virginia, I remember having seen a table in the *World Almanac* which listed the lifespans of various animal species. The longevity of one of the creatures listed was a great surprise and has remained in my mind to intrigue me ever since. The life-span listed for the raven was 200 years!

There is a stuffed raven in a historically preserved room at the University once occupied by Edgar Allan Poe when he was a student there (circa 1830). I have often imagined that if the list in the *World Almanac* was correct, there are living ravens and crows still flying around that could have seen Edgar Allan Poe in the flesh or even George Washington or Thomas Jefferson, for that matter. To me, a living raven that might have seen Poe is more intriguing than a stuffed raven that is merely symbolic of Poe's famous poem.

Is the list correct? Can a raven or crow really live that long? Throughout my life, I have been watching for evidence to confirm or deny the validity of the question. I have found no firm proof but I have found more evidence to support a very long life-span for ravens and crows than I have to the contrary.

I remember reading a scientific article a few years ago which discussed the aging of tissues of various animal species. It said that a coroner can take a sample of human tissue and by microscopic observation deter-

mine the approximate age of the source by observing cellular changes which occur with time in all human beings. The article pointed out that the tissues of different species change quite differently with time. For example, the tissues of crows and hawks do not undergo the deterioration characteristics of human beings. Tissues from an old crow or hawk are essentially undistinguishable from those of a young one. This observation lends strong support to the possibility that crows may live a very long time.

It is well known that certain other bird species have long life-spans. Parrots kept in captivity have exceeded 85 years of age. Their maximum life span is not really known.

The famous ornithologist Arthur Cleveland Bent published a twenty-volume series on the life histories of American birds. His volume on jays, crows and titmice discusses the longevity of crows. He points out that there are relatively few records and that these are insufficient to answer the question. Banding has been limited and too recent to cover the life-span. He makes it clear that very few crows die a "natural" death. Without question, man is the principal predator of the crow with the gunner considerably shortening the life expectancy of this species. Many states have paid bounties for crows' heads in order to reduce crow damage to corn crops.

Bent says, "crows kept in captivity have lived spans of life exceeding 20 years, but it is doubtful if many individuals in nature ever approach that age." Having read this from a great authority, I considered the matter settled and proceeded to forget about the possible long life-span of crows.

However, within the past 12 months, additional evidence has surfaced which has renewed my interest. I was discussing the subject with my brother in Virginia who does considerable hunting. He described having seen year after year a crow with a few white feathers in his head (due to pigmentation mutation, not old age). This crow was always seen within a few miles of the same location along the James River. This crow was the leader of the flock.

My brother mentioned this in conversation with an 80 year-old Virginia countryman and hunter recently. Upon hearing it, the old gentleman's eyes sparkled and he asked if it were near a certain location on the James River. Upon confirmation, he related that he had first seen this crow when he was a young boy just learning to hunt. If indeed, this were the same crow, it would be at least 75 years old.

One of the best sellers of 1976 was *The Book of Lists*. It has a list of the maximum recorded life-span of 94 animals. The raven is the eighth oldest animal listed with an age of 69 years. The source is the Federation of American Societies for Experimental Biology, 1972. Presumably, the raven is still living.

The guide book to the Tower of London has some interesting comments on ravens:

*"Ravens were once common in London's streets and were protected for the services they rendered as scavengers. It is probable that there have always been ravens at the Tower, and there is a legend that the Tower will fall if it loses its ravens. The birds are, therefore, carefully guarded."*

*"Ravens can attain a good age, and one of the Tower birds, James Crow, was a resident for 44 years. The birds are not popular with everyone, they are often noisy, and will amuse themselves by removing putty from windows, causing damage to unattended cars and taking sly pecks at ladies' legs!"*

On October 9, 1977, the *Denver Post* ran an article by a *New York Times* writer, Christopher Wren, from Kiev, U.S.S.R., which discussed the life-span of animals. Nikita B. Mankovsky, deputy director of Kiev's Institute of Gerontology, said: "The life-span of any biological species is programmed. For instance, a crow can live 150 years and a horse only 30 years. We consider that the average human life-span should be about 100 to 110 years."

All of this evidence would suggest that we don't really know how long a crow can live but it also suggests that it might be a very, very long time. Tests have shown that the crow is the most intelligent of all the bird species. It is possible that the crow may also have the greatest life-span if we let him achieve it. So the next time you are tempted to shoot a crow, remember that it might be the rare one who saw George Washington in the flesh.

# HUNT CLOSE

## A Worthwhile Command

By Charles D. Bays

**M**any trainers have stated that if a bird dog were blessed with a reasonably good nose, had good hunting instincts, and would readily respond to only three commands, he would be well worth his keep. The three essential commands are, of course: "whoa," "come" and "fetch." Add "back," and one would have a pretty fair gun dog.

Actually, however, there is little reason to restrict the commands which can and should be taught. Once the dog has learned to learn, after good rapport has been established and he is eager to please, it's simply a matter of choosing which command will be taught next.

Sit, stay, load up, kennel, dead, heel, steady-to-wing-and-shot, and a working knowledge of whistle and hand signals, to name a few, will each enhance the dog's desirability and capabilities. In the course of a well-bred dog's lifetime, the trainer will be vastly rewarded for the relatively short time spent in teaching these refinement, convenience and proficiency commands.

A command I both teach and recommend is "hunt close." To the dog it comes to mean hunt closely, slowly and carefully. The obvious advantage of the command is the ability to control the dog's range. The quail hunter, when tracking singles, will not have to try to stick close to his dog — an impossible task — but rather can have the dog hunt closely to him, on command.

The dog's slower, more careful pace will usually result in his finding more single birds — and bumping fewer. Since the dog is in good range, the hunter is better able to observe and correct him in the event he does bump singles. This, of course, develops staunchness.

For the hunter who has only one dog which must serve double duty on both quail and grouse or woodcock, the command is almost essential. Most grouse and woodcock hunters will agree the dog's maximum range should be no more than thirty yards. To allow the dog to range 100 yards or more to covey hunt quail one day and expect him to consistently work grouse at thirty yards the next may seem unlikely; however, once even the most bold, hard-running, wide-range dog has a good working knowledge of the command, it can be done.



**H**ow, then, do we go about teaching this command? To begin with, this command, as with any command, can be more easily taught to a young, receptive dog. I would give serious consideration to attempting to teach this command — or any other, for that matter — to a self-hunter, a bolter or a generally improperly trained dog (often mistakenly referred to as a hard-headed dog).

By use of stern training procedures and devices, such as electronic shock collars, these improperly trained dogs can sometimes be brought under control, and a few will become quite outstanding gun dogs. My recommendation, however, is to get rid of such a dog. The expense, effort, and, more importantly, time, spent in training, or, more precisely, untraining and correction, is seldom justified. So, in the remaining space I will attempt to deal with the puppy and the unspoiled dog, the dog that has learned the basic commands and with whom you have developed rapport. This, in my opinion, is the dog worthy of further instruction.

As soon as the puppy is weaned, preferably at seven weeks, take him for short walks at each opportunity. At this young age no instruction or command will be necessary; he will feel a very basic need to keep you in sight at all times, to stay close.

Take him along on short car trips. This will not only insure his getting extra attention at this critical stage in his mental and physical development, he will also learn to ride, and in time load up, without fear or hesitation looking forward to the pleasurable walks at the end of the ride in a strangely fascinating place.

My family and I have been taking the four-month-old pointer I am presently training on short rides for over two months. He is especially fond of trips to nearby Carvins Cove and has unconsciously learned to stay close with little or no correction. This is invaluable; even if you do not intend to later use this ideal situation to an advantage in teaching the command hunt close, it will go a long way to insure that the dog will not become a bolter or self-hunter.

As the dog becomes older and more adventurous, he will start to range out further. Give the command “come,” or blow the whistle, and when he advances to within a distance of about twenty yards or so insert the command “hunt close” or simply “close.” At first he will appear confused. If he continues toward you or stops, continue on toward him. He will usually move out. As his range increases give the command again. If he fails to respond, and he very well might, enforce his new command with the command “come,” or by a whistle signal.

As you can see, it is vital the dog has a good understanding of “come” before the new command can be taught. As with all commands, repetition is the key. But don’t overdo; instead, spring the command on him at various intervals during the course of the walk or hunt and on successive days. Needless to say, this training should take place without the benefit of a second dog’s presence which actually would serve only as a distraction.



**C**ommercially raised or “tame” quail can be an asset in teaching the practical meaning and use of this command. Take the dog afield, let him range out as far as he pleases, then plant a bird in nearby cover. Give the command “come,” followed by “hunt close.” A point should follow. Depending on the development of other stages of training, you may wish to either save the bird for reuse or shoot it for the dog.

Obviously, this is not always the case when grouse or woodcock hunting, therefore, it is best first taught by use of planted birds and single quail. But again, don’t overdo, especially tame quail on any given day. Stretch the learning process gradually over several days, weeks or months, if necessary.

In time, the dog will learn to favorably respond to the command without hesitation. But don’t expect him to if other dogs in the field are allowed to rampantly covey chase over the next ridge; the temptation to follow is usually too great. It is far better to avoid hunting with such dogs on future hunts. A pack of dogs is usually no better than the worst one in the field.

All worthwhile endeavors require time and effort; teaching this command is no different. But the added weight in the game bag and the satisfaction of hunting over a mannerly dog under good control at all times will be the benefit of your efforts.



# The Central Blue Ridge

## Part II: Flora of the Blue Ridge

BY RUSKIN S. FREER &  
FRANK T. HANENKRAT

PHOTOS BY FRANK HANENKRAT

*Yellow Lady's slipper is a rare orchid found in rich loamy areas of the central Blue Ridge. (left)*

**T**here is a rich flora in the Central Virginia Blue Ridge, varying according to the underlying rock formations and their developed soils. Extreme variations of ground surface include bare or nearly bare volcanic outcroppings, limestone outcroppings, sandstone shale and rich humus. The relative abundance or absence of surface moisture is also a strong determining factor in plant selection.

Most visitors to the region are struck first by the extensive forests. The forestation seems mature in many places, but almost all of the primeval forest was harvested in the widespread timbering operations that continued until about 1940. One of the last remnants of the original forest, a stand of hemlocks along Hunting Creek in Bedford County, was harvested in recent years. The Big Levels in Augusta County was formerly burned regularly to promote production of wild blueberries that were shipped out by the carload on a then-existing railway, but burning was prohibited after the Forest Service took control of the area. Since the prohibition of uncontrolled burning and cutting, the forests have renewed themselves and now much fine timber exists throughout the region. A small remnant of primeval forest can be found along Station's Creek in Amherst County.

Probably every botanist who thoroughly works his own area, thinks of it as a meeting ground for northern and southern plants. The same is true for those familiar with the Central Virginia Blue Ridge. In recent years the known range of a southern plant, the Carolina hemlock, *Tsuga carolinensis*, has been extended northward

VIRGINIA WILDLIFE





*Trillium* appears in early Spring on hillsides with rich loam.



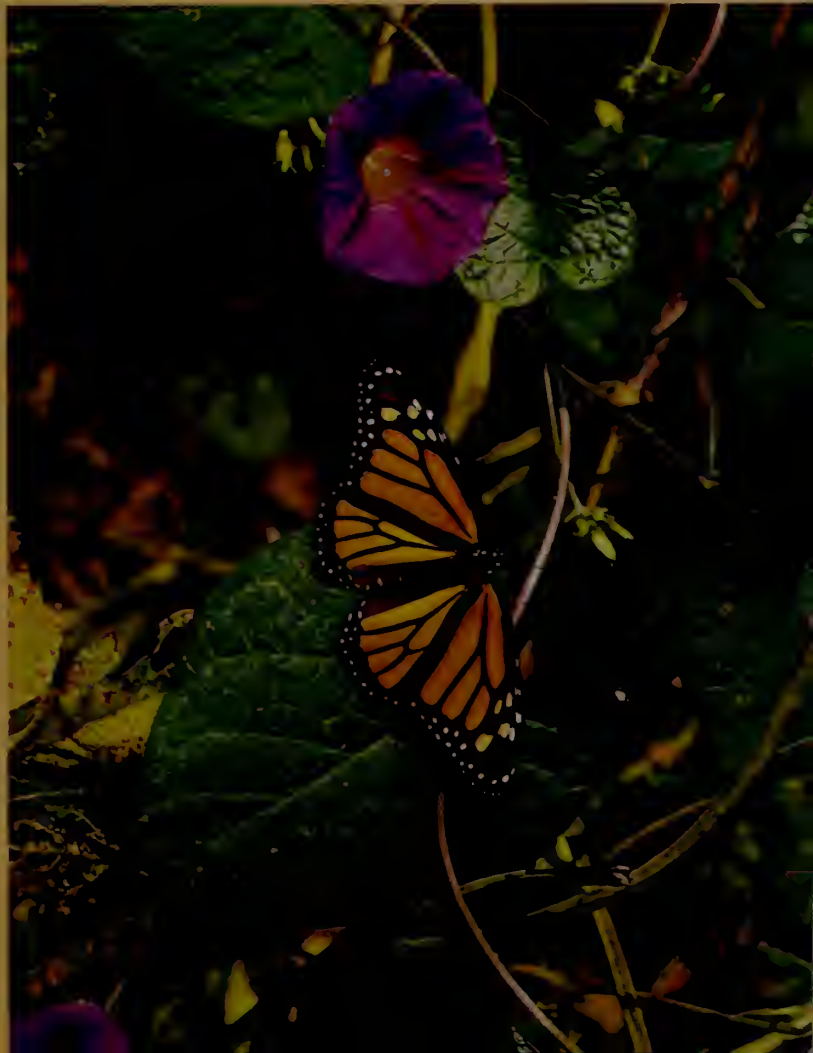
Bird's-Foot Violet is a common Spring plant along sunny wood-margins and trails. (above) A monarch butterfly against a background of Morning Glory, a Spring sight in the central Blue Ridge. (below)

to the James River, a distance of over 75 miles. And the rare rattlesnake-plantain, *Goodyera repens* var. *opioglossoides*, also a southern plant, has been found in two places.

There are northern plants, too. Just south of Tye River Gap at milepost 27.4 there is a small but significant pure stand of the sugar maple, *Acer saccharinum*. Lying on the western slope of the mountain, this species extends for some distance below the Parkway. The sugar maple is rarely found in the Central Virginia Blue Ridge, but is an important component of more northern forests, where it is usually associated with beech, birch, or hemlock. The three latter species are frequently found in the area, and even the paper birch, *Betula papyrifera*, has been found here, but only in occasional isolated clusters. Also in this sugar maple grove are a number of northern herbaceous plants, such as the blue cohosh, *Caulophyllum thalictroides*; white baneberry, or doll's eyes, *Actaea pachypoda*; and the small tree, *Acer pensylvanicum*, striped maple, or moosewood.

Sugar maples occur on the Parkway in smaller numbers at milepost 24, and there is a single tree on Apple Orchard Mountain near the former Bedford County radar station. There are also many of these trees on the slopes of Apple Orchard about a half mile below the Parkway on the western side in a hollow called Sugarland.

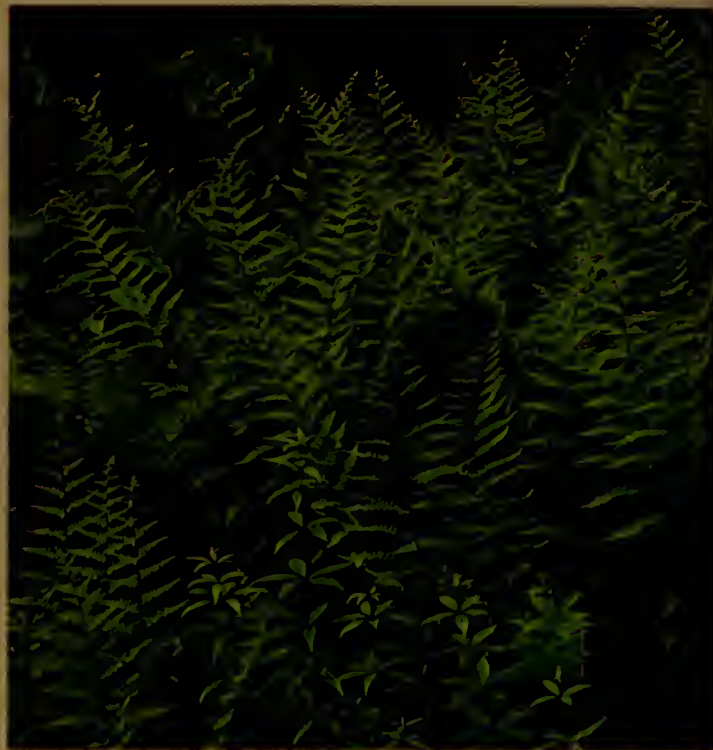
These plants may be considered as relics of the ice age. There are no relics of the true boreal forests of that period, such as the balsam firs or spruces; however, the







Found sporadically in the Blue Ridge, Sugar Maple trees add a blaze of glory to Autumn colors.



Many species of fern grow in the Blue Ridge, often in dense stands.

red spruce has persisted less than 60 miles to the northwest in the Alleghenies of Highland County.

On high summits there are several unusual plants, most of them with northern affinities. The rock sandwort grows on Big Priest, with the impressive scientific name *Arenaria groenlandica* var. *glabra*; meadowsweet grows on Flat Top and Sharp Top; and Michaux's saxifrage, on several peaks. Mountain maple and mountain ash also occur in many places at higher elevations.

Botanists find the streams flowing from the large springs near summits or ridge tops to be good hunting grounds for a number of plants peculiar to cold mountain streams. Common among these are false hellebore, tasselrue, and lettuce saxifrage. Close by a high spring situated near the top of Humpback can be found two woody shrubs, ninebark, *Physocarpus opulifolius*, and alder, *Alnus* sp., streamside plants normally found at much lower altitudes.

The ponds on the alluvial slopes west of Big Levels produce a fascinating mixture of northern, southern, and coastal species. At Green Pond the little carnivorous plant, sundew, grows on a thick bed of sphagnum moss. Conspicuous at most ponds are swamp pink and golden club. On the western edge of the slope is a swampy area containing the coastal magnolia, *Magnolia virginiana*, along with numerous other rare or exotic species for that part of the state.

But the habitat with the greatest variety and best growth of both trees and herbaceous plants is the deep black loam on the Pedlar formation. Here trilliums abound, both the large white and smaller red (or purple) species. The latter is malodorous, for which reason one of its common names is "stinking

Benjamin." The yellow ladies' slipper, white baneberry, bellwort, anemone, hepatica, bloodroot, violets, and many other familiar spring wildflowers may be found. A conspicuous but not especially attractive plant of the black loam may be the huge, coarse cow parsnip. Depending on the location, one may also find large stands of may-apples or one of several species of handsome ferns.

A plant of rich soil the professional botanists are especially happy to find is the mountain bugbane, *Cimicifuga americana*, northern relative of the more common black snakeroot. Tall meadowrue is a frequent plant along streams, in the open, at lower elevations. Some of these growing in Love Swamp have been known to be over 12 feet tall.

Another plant of the black loam, growing abundantly on Rich, Big and Little Onion Mountains, is the ramp or wild leek, *Allium tricoccum*, famed in the ramp feasts of West Virginia mountains. There are no records of such celebrations in the neighborhood of the Onion Mountains, known locally in the early days as Big Engern and Little Engern, words surviving from the Old English.

When a botanist begins describing the flora of his favorite hunting grounds, it is difficult to be brief, but two plants having great charm are the silvery whillow-wort and the moss pink. The former grows on rock outcrops at high altitudes; the latter, on banks at lower altitudes, is the familiar *Phlox subulata* of commerce and home gardens.

And there are the lilies, irises, violets, cardinal flowers and . . . well, we must stop somewhere. The wonderful world of plants of the Central Virginia Blue Ridge beckons irresistably!



# Hunting Outlook

Statewide Deer, Bear, and Turkey Harvest

County or City	1976 - 1977			1977 - 1978			1978 - 1979		
	Deer	Bear	Turkey	Deer	Bear	Turkey	Deer	Bear	Turkey
Accomac	118	0	0	242	0	0	229	0	0
Albemarle	1,027	13	25	890	12	20	1,384	18	72
Alleghany	930	16	137	834	16	229	888	8	328
Amelia	1,816	0	46	2,160	0	47	2,002	0	50
Amherst	567	6	13	512	12	11	727	7	59
Appomattox	880	0	16	820	0	34	794	0	53
Augusta	1,501	20	214	1,143	16	233	1,369	10	408
Bath	2,388	10	349	1,892	7	423	2,008	1	542
Bedford	655	12	17	624	6	18	919	10	49
Bland	668	6	139	583	1	141	749	9	157
Botetourt	1,179	20	187	1,154	16	235	1,362	6	480
Brunswick	880	0	10	1,078	0	11	1,246	0	23
Buchanan	0	0	0	0	0	0	0	0	0
Buckingham	1,804	0	46	1,753	0	57	2,132	0	75
Campbell	196	0	12	247	0	13	272	0	29
Caroline	1,773	0	43	2,248	0	39	1,952	0	75
Carroll	107	0	0	89	0	0	129	0	0
Charles City	699	0	0	931	0	0	1,122	0	0
Charlotte	348	0	24	500	0	24	548	0	33
Chesapeake	397	3	0	443	4	0	479	5	0
Chesterfield	961	0	0	1,158	0	0	1,105	0	0
Clarke	271	0	21	239	0	21	253	0	34
Craig	970	2	117	810	3	181	1,140	3	207
Culpeper	315	0	7	412	0	15	419	0	15
Cumberland	1,234	0	36	1,267	0	41	1,466	0	51
Dickenson	14	0	0	17	0	0	1	0	0
Dinwiddie	1,171	0	45	1,361	0	21	1,206	0	39
Essex	179	0	9	223	0	8	192	0	11
Fairfax	13	0	1	24	0	0	36	0	0
Fauquier	791	0	29	951	0	21	991	0	38
Floyd	82	0	0	93	0	0	140	0	0
Fluvana	1,150	0	23	1,102	0	27	1,396	0	56
Franklin	249	0	0	365	0	0	407	0	0
Frederick	979	0	133	916	0	97	1,158	0	140
Giles	791	9	178	725	9	268	861	11	314
Gloucester	322	0	0	344	0	0	273	0	0
Goochland	644	0	17	729	0	15	936	0	16
Grayson	1,272	0	121	1,112	0	137	1,491	0	153
Greene	91	10	3	65	3	1	52	10	2
Greensville	794	0	0	852	0	0	1,045	0	0
Halifax	544	0	32	659	0	36	744	0	46
Hampton— Newport News	233	0	0	171	0	0	205	0	0
Hanover	284	0	0	300	0	0	334	0	0
Henrico	283	0	0	377	0	0	448	0	0
Henry	33	0	0	42	0	0	59	0	0
Highland	1,409	1	201	1,151	0	269	1,239	4	293
Isle of Wight	737	0	0	1,123	0	0	921	0	0
James City	181	0	0	342	0	0	282	0	0
King & Queen	437	0	26	514	0	14	441	0	31
King George	357	0	0	405	0	0	479	0	0
King William	454	0	19	513	0	20	653	0	28
Lancaster	421	0	0	584	0	0	489	0	0
Lee	82	0	0	81	0	0	84	0	0
Loudoun	761	0	10	824	0	5	993	0	11
Louisa	894	0	36	986	0	26	1,088	0	42
Lunenburg	631	0	13	768	0	10	484	0	11
Madison	107	27	1	104	21	3	86	15	2
Mathews	75	0	0	103	0	0	66	0	0
Mecklenburg	358	0	0	497	0	0	410	0	0
Middlesex	102	0	0	74	0	0	90	0	0
Montgomery	130	2	55	106	0	77	162	1	124
Nelson	543	8	16	559	13	17	804	21	30
New Kent	672	0	0	877	0	0	1,146	0	0
Northampton	44	0	0	58	0	0	75	0	0
Northumberland	422	0	0	486	0	0	512	0	0
Nottoway	986	0	7	1,386	0	17	860	0	22
Orange	401	0	30	413	0	19	421	0	31
Page	8	11	47	389	11	38	520	10	72
Patrick	207	0	0	260	0	0	326	0	0
Pittsylvania	590	0	13	727	0	7	889	0	20
Powhatan	1,737	0	26	2,136	0	31	1,867	0	46
Prince Edward	606	0	24	754	0	20	819	0	37
Prince George	825	0	0	962	0	0	1,321	0	0
Prince William	371	0	15	573	0	9	324	0	15
Pulaski	410	1	54	347	0	81	422	0	76
Rappahannock	477	4	9	400	2	10	806	7	17
Richmond	435	0	0	520	0	0	577	0	0
Roanoke	63	0	18	60	0	21	99	0	30
Rockbridge	949	17	218	814	15	241	1,008	6	487
Rockingham	2,274	26	121	1,941	20	153	2,052	19	332
Russell	55	0	18	40	0	13	45	1	0
Scott	98	0	0	102	0	0	102	0	0
Shenandoah	1,493	0	167	1,321	6	118	1,744	9	230
Smyth	671	0	73	489	2	96	325	3	59
Southampton	2,802	0	0	3,112	0	0	3,093	0	0
Spotsylvania	526	0	27	554	0	24	485	0	12
Stafford	657	0	14	761	0	14	521	0	22
Suffolk	437	2	0	602	7	0	680	4	0
Surry	1,297	0	0	1,407	0	0	1,377	0	0
Sussex	1,487	0	0	1,435	0	0	1,834	0	0
Tazewell	106	0	23	103	0	56	105	2	39
Virginia Beach	109	0	0	114	0	0	152	0	0
Warren	520	3	70	507	4	56	598	0	68
Washington	203	1	28	180	2	31	207	0	29
Westmoreland	205	0	0	277	0	0	224	0	0
Wise	57	0	0	65	0	0	60	0	0
Wythe	832	0	134	659	1	146	755	1	137
York	887	0	0	1,038	0	0	754	0	0
TOTALS	63,201	230	3,563	67,060	209	4,066	72,545	201	5,908

After twelve years of setting new records, Virginia's deer harvest is expected to level off. This year's kill should be around the 72,545 mark set in the 1978-79 season, but may not beat it. Deer are still abundant throughout their better range with perhaps a slight increase in the eastern end of the state.

The outlook for bear is about the same. The bear kill has fluctuated little over the past five years and a harvest of about 210 is expected. Soft mast is reported fair to good. Bears are expected to be most numerous in counties bordering Shenandoah National Park.

Following a good hatch last spring, good numbers of turkeys were carried over from last year. Spring breeding populations were high and nesting success was reported good. Barring heavy rains in late summer, there should be plenty of turkeys for hunters this fall. The only exception is Southwest Virginia where heavy and frequent rains have probably taken their toll in young turkeys.

Quail are still trying to recover from two bad winters in succession. Early brood reports were good and, barring late summer drought, production should help bring populations closer to a normal level. All in all, some improvement over last year is expected, except west of the Blue Ridge where the birds were hardest hit.

Rabbits had a banner summer season, due in part to the abundance of lush vegetation from late spring rains. However, early fall die-offs could cancel out these gains. Especially high numbers are reported in Southeastern Virginia.

Squirrels have also fared well in 1979. A heavy mast crop last year in Eastern Virginia resulted in a large carry-over and good survival of winter-born litters. With no late frosts reported, there is every reason to believe that there will be substantial mast this fall. Generally, west of the Blue Ridge there was scarce mast last fall, so carry over was not as good.

Grouse are struggling up from a low point a couple of years ago but early brood reports were good. This, coupled with the good crop of soft mast, may give grouse hunting a needed boost this fall.

The mountain streams of the southern states doubtless provide one of the most beautiful settings for fly fishing in the world. I think, specifically, of the Blue Ridge Mountains in the oldest colony, where with a relatively inexpensive license one may wander freely over hundreds of miles of stream. In a part of the world where streams grow cloudy after the frequent evening thunderstorms, these remain startlingly clear. In a nation that up to the present has all too frequently managed its resources only too poorly, these streams are in fine condition and teeming with trout.

There are both browns and rainbows, but by far the most prosperous, and numerous, resident is the brook trout (*Salvelinus fontinalis*) known in Britain by the unglamorous name of char. It has a reputation for being less wary than the brown or rainbow, but in the mountains where the streams generally are small, the brook trout requires careful stalking. Frequently these streams remain completely unchanged since Indian times and, due to the heavy cover, can be difficult in places. Precise casting, as well as careful stalking, is, therefore, often necessary. As in most small streams, the trout are concentrated in the pools or in the swift water above them, and it is in these areas, particularly, that the fish requires cautious stalking. Now, if one is willing to case from a sitting or kneeling position, it helps matters a great deal. Stalking a rising fish always provides the best moments of trouting, particularly when the fish is large, the stream small, and the water crystal clear.

The brook trout is an accomplished fighter; its appearance also makes it one of the most attractive of all game fish, and with the sea trout, the tastiest. The pink-fleshed trout is best when cooked slowly, right on the stream's edge, directly on the coals of a small fire. Such fine fish are not found everywhere, and I haven't seen them in abundance anywhere else in years.

Probably one of the finest aspects of the combination of brook trout and these mountains is the exceptional great beauty and adventure one finds. I have for some years been convinced that it is the noise of running water that provides one of the feature attractions of most small trout streams. A mountain stream obviously has a good deal of this. In the woods above the Shenandoah River there is also a wealth of wildlife. Swallow-tailed butterflies of spectacular size are one type among many that float above the streams on summer days. The insect-like hummingbird also can frequently be seen there, particularly among the fine wildflowers. The streams themselves contain an enormous amount of life; there is a large assortment of insects, a good part of which the trout feed upon, while minnows, crayfish and harmless water snakes can be seen continuously. Along the banks, raccoons, deer and wild turkeys are sometimes encountered every few miles. Much of these streams are in deep shad, for the canopy of the woods above shuts out a good deal of sunlight, and the half light pierced by sunbeams combined with the mellow colors and the sound of water splashing on stone make an unforgettable atmosphere in which to fish.

# The Brook Trout and the Blue Ridge Mountains

The quiet, undisturbed peace to be found at a mountain stream is one of the rewards of pursuing the brook.

By Garrett Evans

Usually I choose a stream called Jeremy's Run, for it is more accessible than many of the others. The Thornton River is the best stream in this area but it is also the least accessible, and, perhaps, this is partly responsible for its large stock of fish. Jeremy's Run, despite its beauty and accessibility, is still rarely fished, because local trout fishermen for some curious reason would prefer to catch miserable stock fish, and the mountain streams are seldom, if ever, stocked. Because I prefer to cover four or five miles of a stream in a day, I bring a minimum of equipment. A flybox and rod apart from the necessary small bottle of mucilin and a small knife-scissors combination seems enough. It is a good idea to bring a little water as well, though here one could safely drink from the stream.

Leaving the car half a mile below an old mountaineer's cabin, I proceed along a trail that follows the stream up into the mountains. I prefer to go early, but despite this I always find it difficult to stop and turn back in time to be out of the woods by dark. Here it's best to walk up a mile or two before starting, because the finest fishing is between the third and fourth mile. I use a little six-foot Sharpe's "Midge" rod with a small Hardy's Marquis No. 4 reel; my casts (or leaders) are made of three more or less equal lengths tied with blood knots, descending from 3-3/4 lbs, to 2-1/2 lbs to 1-3/4 lbs, breaking the strain which together come to about six feet. I usually use size 16 flies, medium olives being good must of the time, but the Thompson's





Fancy is the best. The coch-y-bundu works well too, particularly when the fish are taking the local Japanese beetle. There are fish in between, but fishing the pools, or the water immediately above them, is the best policy. The first pool, about a mile up the trail, is surrounded by pines and easily approached from downstream. Often there are a number of trout rising in it at once and dozens of others spaced out hovering a few feet beneath the surface. This pool is perhaps 20 feet wide and 35 feet long, though the stream above is wider than usual and proceeds another 15 yards or so; there is perhaps 8 feet of water in the deepest part and, set in the woods with its mossy banks and crystal clear water, it makes a beautiful sight. I find it a good idea to look it over carefully before moving into a position to cast. Usually there are fish rising a matter of inches from the tail of the pool and these clearly should be tried first to avoid fish seeing the line. A cast to these first risers is only a matter of a few feet, and because the ground drops away here with the stream, one is invisible to them completely. Every cast produces a rise until the fish begin to move forward; eventually they become suspicious but not enough to stop feeding altogether. The middle can then be covered and, finally, both the head of the pool and the stream entering it — here the finest finny denizens are found. Two or three sometimes are in the creel at this point. Even after they have ceased to rise, the brook trout usually remain visible until they see the opposition clearly. Moving

from this pool, I once came by a good half-pounder by taking it from a snake which was swimming toward me. I merely had to place one foot on the unsuspecting swimmer as he went by and take the fish. The snake escaped.

The trail crosses the stream once or twice in the next mile or so and just after such a crossing is one of the finest small pools — long, narrow and deep, containing some chaps approaching the pound mark, large for these mountain streams. It is impossible to forget a fine brook trout of just under that size caught after a number of casts.

The evenings, like the dawns with their rich light and birdsong, are extremely pretty. Because of the slight incline one is able to glide back down along the trail almost effortlessly. That evening the bell notes of the wood thrushes rang through the dripping woods, the mountains were deep blue and dreamlike, the views were breathtaking, the glimpses of the sunset sublime. I have yet to find a more pleasant place through which to walk at the end of the day with a full creel. Coming back down through the Upper Teign valley, listening to the nightingales and greeting the odd sea trout on the way up, is very pleasant. The slap of trout on water in the growing dark on the deafeningly quiet lochs above Mallaig is fine indeed. But I shall always prefer the evening walk back along the crystal streams, winding down through the woods of the Blue Ridge Mountains.





# Clapper Rails & High Tides

**E**very time I see a clapper rail nest I wonder why this bird insists on locating it in such a place that it is so vulnerable to abnormally high tides. Severe damage to clapper rail nests and very young chicks will be encountered if a tide of three feet or more above normal occurs on Virginia's Eastern Shore. If a high tide happens to be at the peak of the nesting season the losses could be critical. Therefore, it is important to know when nesting reaches its peak and at what time of the year abnormally high tides would do the most damage. This information is very important to the biologist in order to make recommendations concerning seasons and bag limits for this bird.

A five year research project was started in 1973 to determine the peak nesting period for clapper rails on Virginia's Eastern Shore. We defined "peaks" as being the time when the most eggs were found in the most nests that could be located on the study area. The area was a section on the Western side of the Game Commission owned Mockhorn Island which is located on the Southeast side of Northampton County.

The Refuge Supervisor visited the study area each week during the nesting season to locate the nests and count the eggs. He began looking for nests before the season started and continued his weekly visits until no nests containing eggs could be found. This system provided a way to determine the beginning and end of the nesting season and to identify peak nesting periods. When a nest was located, a stake was placed nearby and a paddle was tied to the stake. This made the nest easy to locate later. The nest number, date of weekly visit, and number of eggs was recorded on the paddle and also on a data sheet provided for the study. An effort

was made to determine whether or not the eggs hatched or if the nest had been destroyed. Some predation was noted but high tides were the most damaging influence on the nests and eggs.

The nesting season ended the first week in August during all years of the study except 1976. During that year the season ended one week earlier than the other years but it also began the third week in April which was one week earlier than nesting began in any of the previous years.

During the entire study, only four nests were observed to have been started later than the first week in July. This indicates that high tides (approximately 3 feet above normal) any time in July after the first week would be very damaging to the late hatch because they probably would not re-nest. However, if the early hatch was not destroyed, we still might have a good supply of birds during the hunting season. The late nesting period will have fewer birds nesting if the nests were not destroyed during the first nesting period. This situation occurred in 1977. In 1976 high tides were very destructive to the early nesting period so the peak of the second nesting period was almost as high as the peak of the first.

The data indicates that if the nests are destroyed in May or June the birds will probably re-nest but the average number of eggs laid will probably be less.

It has been reported in South Carolina (Bladin, 1963) that the bird is multibrooded but this study does not establish the effect of this phenomenon on the later nesting period.

From this study, it appears that it would take a minimum of two very high tides spaced at certain inter-



Photo by Mel White



*Clapper rails are unusual birds, difficult for researchers to locate.*

Photo by Mel White



*Granville Ross, Saxis Marsh Wildlife Management Area Supervisor, did much of the leg work involved in this study.*

vals to severely curtail the seasonal production of clapper rails in Virginia. One of the high tides would have to occur during the third or fourth week in May or the first week in June in order to destroy the nests of the first nesting period. The other tide would have to occur during the second, third or fourth week in July. The exact week that would destroy the most nests cannot be predicted. It would depend upon how early the birds began nesting to determine the peak of the first nesting period. The week the nests are destroyed during the first period can be used to determine the peak of the second nesting period which is about six weeks later. (See graph.) However, extremely high tides during any of the weeks listed above would be very damaging if two of them occurred the same year at the intervals indicated.

Since the peaks between the nesting periods are usually about six weeks apart, a good rule of thumb for figuring maximum damage to clapper rail production is: if a tide occurs during the last part of May or the first week in June and destroys the eggs or chicks of the first nest period and a second destructive tide is about six weeks later than the first one and it occurs later than the first week in July, we will probably have severe losses that cannot be recovered by re-nesting and we will have lost the birds from the first nesting period. This can be determined from the graph. Of course, the total losses will depend upon the severity of the storm or how high the tides are but if extreme conditions occur twice or more in one year as described above, serious consideration should be given to reducing the bag limit on clapper rails, shortening the open season, or both.

The highest number of eggs recorded in any nest was 15; the overall average for all years of the study was 8.5. The following table shows the average number of eggs per nest observed throughout the study period.

TABLE I. AVERAGE PER NEST, 1973-1977

Year	1st Nesting Period	2nd Nesting Period	Yearly Average
1973	no sample	7.3	7.3
1974	8.6	5.4	7.2
1975	9.4	8.8	9.1
1976	9.0	9.1	9.0
1977	8.9	8.2	8.7
Five Yr. Average	9.0	7.8	8.5

We believe the information gained by this study will be very helpful in understanding clapper rail population fluctuations due to abnormally high tides. This research project was conducted by personnel of the Virginia Commission of Game and Inland Fisheries utilizing matching Pittman-Robertson funds as approved by the U.S. Fish and Wildlife Service.

# Through the Artist's Eye

The Wildlife Art of  
Linda Cranford



Linda Thompson Cranford's experience as a biological illustrator comes through in her wildlife art.

Her almost painfully exacting attention to detail is the hallmark of her work.







Cranford's subjects vary as illustrated here, from Canada geese to bobwhite quail to chipmunks and long-tailed weasels. Her realistic watercolors can show the beauty of even the most unappealing of species.

Linda Thompson Cranford makes her home with her husband in the mountains of Virginia in the university town of Blacksburg.—S.C.



# Scouting for Whitetails

**Scouting for deer is an enjoyable and profitable off-season activity for the enthusiast who just can't get enough.**

**by Steve Rhodes**

*A buck rub such as this can often be found in an area inhabited by deer. (left) Tracks like these are the most common clue to the whereabouts of whitetails. (below)*



*Photo by Spike Knuth*

*Photo by Harry Gillam*

**VIRGINIA WILDLIFE**



Rolling black clouds to the west threatened to blot out the August afternoon sunshine and a faint breeze stirred the leaves, exposing their white undersides. A violent thunderstorm was due to strike this sweltering section of Buckingham County farmland before dark.

Ray Cumbie and I paid the approaching storm little heed as we concentrated our 7x50 binoculars on a herd of deer in a lush green clover field 200 yards distant. There were no less than 14 whitetail bucks and a few scattered does in the gathering of deer. Each animal was totally absorbed in its meal, grazing rapidly while thunder boomed west of the James. Five bucks were trophy size and largest sported a heavy ten point rack with a 22 or 23 inch spread. After thoroughly glassing the bucks, we sneaked back to the pickup and drove away, leaving the whitetails grazing undisturbed.

Glassing that excellent herd of bucks was one of many great thrills I experienced while scouting for trophy bucks over the past several years. The whitetail is a full time year' round sport for me and if not actually hunting them, I'm talking of and scouting for them, or scouring the thickets in search of their shed antlers. Successfully, I might add.

Many avid sportsmen are missing out on this greatest of all off-season pastime . . . watching whitetails. During open season my hunting areas in Virginia abound with redcoats; everyone is hunting deer, talking deer and generally living life to its fullest. Then a week after the closure, the excitement bursts and the whitetail is essentially forgotten until next fall. Only a very small handful of sportsmen continue to watch or in any way associate with the whitetail.

From January through September in a two-county area I frequent, I haven't met another hunter actively scouting these herds of bucks, other than a few close and enlightened friends. The elbow-room suits me, but I'm increasingly amazed at the excitement other hunters are passing up. Starting in late June when the bucks have grown much of their antlers, most days find me up and out at daybreak glassing or photographing whitetails. I savor each new dawn, see many deer, sight good bucks and have fresh tales to relate during bull sessions with friends. It's intriguing to find out who saw the largest buck during that magic first hour of light.

By October, we know about how many bucks are around, the areas they frequent, and the size of their antlers. In some cases we even have photos of the bucks that we'll hunt in the fall. One can imagine the height of enthusiasm when fall and opening day finally arrives. Our scouting has revealed so many trophy bucks that my companions and I pass up bucks most hunters would be happy to bag. Being selective trophy hunters, we consistently harvest a few of the largest bucks every fall. Most of my best trophies I actually saw weeks or months earlier during morning or evening scouting trips.

The trophy hunter is, by definition, selective. He hunts for quality rather than quantity; yet he recognizes the need to control flourishing deer populations with liberal bag limits and doe harvests. The scouting and taking of the older sires affects the population dynamics the least, as for the most part the mature and over-mature bucks have already contributed their superior genes to the herd in past breeding seasons. As one example, George Critzer of Schuyler added another gaunt old trophy to his collection in November 1978, this buck sported a massive 11 point rack with teeth worn to its gums. We estimated its age at seven and one-half to nine and one-half years.

In Virginia, I've found the best time to locate the trophy bucks is during the mornings from late July through September. Then the older sires expose themselves in open crop and hay fields in that first hour of daylight. By the time most humans are savoring summer breakfasts, these monster bucks have already begun grazing back to their daytime hideouts. With the onset of fall in mid-September, these bucks are rarely seen anymore, except occasionally at the very edge of cover. The big brutes retreat to heavy cover or ridgetops, setting up their breeding territories and hooking the alders in the still dense creek bottoms at night. Summer scouting reveals the locations of prime bucks and subsequent fall scouting inside the cover will show possible ambush spots.

There's something very special in knowing that you and a certain wide-racked buck alone share the secret of his travels. In a late summer herd of bucks, behavior differences are noticed readily and one will be witness to much sparring, hooking and general cockiness. While closely watching a large buck, one soon grows familiar with his very personality. One spectacular 26 inch spread buck that I watched for four successive summers stands out in my mind because he had a hearing capability far exceeding any whitetail I've since encountered. Once he heard my rifle's sling swivel make an almost inaudible squeak from over 100 yards away, I never got him, nor did anyone else as far as I knew.

It's natural to want to get photos of the bucks one is sighting and photography is a natural offshoot of scouting. Its quite a feat to get a photo of the buck of your choice, then bag him later in the fall. Regardless, one will have his rifle and ammo in above normal readiness on opening day after seeing all these bucks while scouting.

The excitement of the upcoming hunt is surpassed only by the deep love and respect the hunter has gained for his antlered quarry during months of fascinating pre-season observations. For the deer-sportsman who spends three-fourths of his year waiting for fall, scouting whitetails is the answer to his anxiety. It's a way of life.

## Dr. George L. Sheppard, Commissioner 7th Congressional District

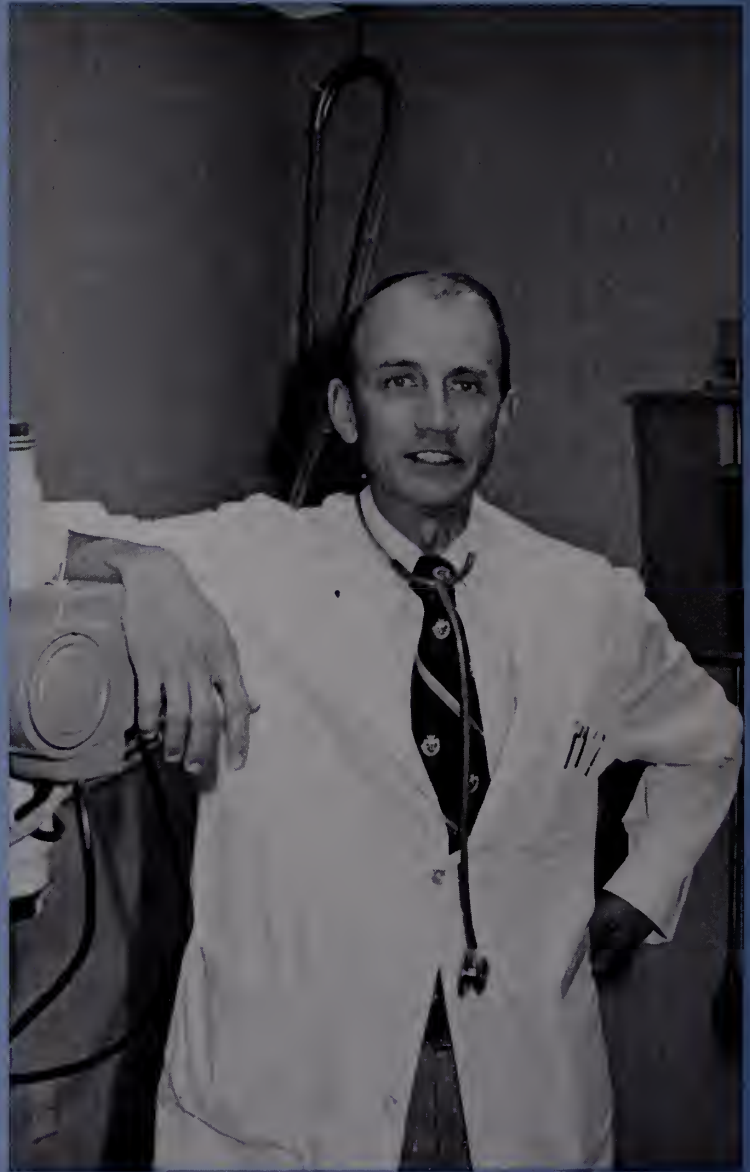
A South Carolinian by birth, George Sheppard was blessed with parents and grandparents who loved, appreciated and put great store in the stewardship of lands, wildlife and the wonders that the Lord created. His growing up years were spent in and around Columbia, South Carolina where his father was an insurance agent. According to George, that was really just an avocation . . . what his dad really did was hunt and fish and he absolutely enjoyed anything to do with the outdoors.

This enjoyment and understanding of things wild were passed on to George at a very early age. As he remembers it, he was about six years old, it was a cold February day and his dad took him crappie fishing off an old wooden bridge. He recently revisited that area. The old bridge is gone, replaced with some antiseptic concrete structure, but the memories remain sweet and cherished of that day long ago.

Summers, during his youth, were spent doing a variety of things. He worked in a grocery store, mended fences on a plantation near Yemassee, S. C., and often visited his grandmother and uncle near Ridgeland, S.C. She was the person who initiated him to "cane pole" fishing in the swamps and ditches of the area. "Uncle Bill," long on patience and sage advice, taught him about brim fishing and included the boy on trips to what was then undeveloped Hilton Head Island for drum fishing around the pilings and docks.

Following his graduation from Columbia High School, where he was a member of the Fishing and Hunting Club, George attended the University of South Carolina, graduating with a degree in Biology. This was followed by his enrollment in the Medical College of South Carolina to pursue his dream of becoming a doctor. Completing the curriculum, he then spent a one-year internship at the University of Virginia Hospital in Charlottesville, Va. Dr. Sheppard liked the area and spent the next three years in residence at that hospital.

At this point in his life, he ran into an old friend who was in medical practice in Winchester, Va. The friend



extolled the virtues of that community, invited George to visit him for the weekend and he fell in love with the people and the town. In 1968, Dr. Sheppard, his wife, the former Marguerite Harley from St. George, S.C., and their daughters moved to Winchester to begin his practice as a neurologist.

On his birthday this year he received an unusual "gift." It was a call from Governor John N. Dalton, inviting him to become the Commissioner for the Seventh Congressional District representing the Commission of Game and Inland Fisheries. He accepted.

Dr. Sheppard began his four-year appointment as Commissioner on July 1, 1979 and he is looking forward with great enthusiasm to working with the sportsmen and women of this "magnificent Commonwealth of Virginia," which he has adopted as his own.



# Growing Up Outdoors

BY SANDY COLEMAN



Illustration by Diane Grant

## Litter Hurts Us All

Matt and Amy raced each other along the beautiful stream bank. As they looked into the clear, blue water the pair saw fish darting back and forth between rocks and aluminum cans and pull-tabs.

The pair was shocked. Miles from civilization on a camping trip with their parents, such a display of litter was the last thing Matt and Amy expected to see. As they looked around, they noticed aluminum cans and glass bottles, as well as paper, strewn along the banks of the little stream. Clearly, someone before them had enjoyed the beauty of the site but hadn't bothered to take the remains of their picnic along with them.

"Look at this," Matt exclaimed. "I just can't believe that people wouldn't take their trash along with them when they leave. Don't they

think of anybody else?"

Amy nodded her head in agreement. "I guess they just don't realize how serious the litter problem is. I think if most people did, then they wouldn't litter. Especially not in places like this! The reason you come here is so that you can see a natural place that doesn't look like a lot of people have been here. It's really sad."

In mutual agreement, the two collected the trash they were able to reach safely and began the walk back to their campsite. There they placed the garbage in the plastic bags their parents had brought along specifically for that purpose.

When the family returned home, Matt decided to do some library research on the subject of how litter affects wildlife. He had been especially concerned to see the fish

swimming amidst the bottles and cans. He couldn't help but think that this pile of trash would affect the fish in some way.

Several days later he was able to tell Amy that his hunch was correct.

From his reading he had discovered that more and more wildlife experts and observers were beginning to find evidence of the serious effect litter can have on wildlife.

Plastic can binders have been known to strangle birds that feed on fish. They swoop down to grab what they think is a nice fish dinner and, instead, end up caught in one of the six-pack binders. Someone would let the binder float on the water, not knowing of the deadly effect it could have on the beautiful shore birds.

Fish have been known to be caught inside of pull tab rings. Biologists in Michigan and California had found some fingerling trout about six inches long with metal pull tabs circling their middles. Also many fisherman had found the metal tabs inside of panfish, trout and other fish. Matt was glad to know that metal pull tabs were no longer legal in Virginia.

A curious deer might get his nose and mouth caught in an open-necked bottle or can. The stories of litter's effect on wildlife were many, Matt found in his reading.

Matt and Amy decided that whenever they found a littered area, they would do their very best to clean it up. They had in the past been involved in a program to clean up their schoolyard and had felt a great sense of pride when the project had been successfully completed. To do something like that again, maybe in a neighboring park, might be a great idea. The kids would have fun and they would be able to clean up a section of their town. Tomorrow at school the children resolved to discuss the idea with their club sponsor.

Litter hurts us all, man and animal alike, Matt and Amy knew. They just wished they could make sure that everyone else knew it, too!

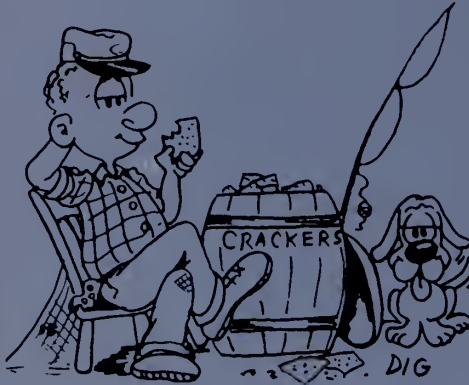
# It Appears To Me

## By Curly

### ... A PERSON OUGHT TO HAVE ONE

Last Spring I mentioned a booklet that the American Petroleum Institute was offering in an effort to encourage people to not dump out their motor oil. Apparently this philosophy is contagious, for now another company is stressing the same thing. The Kendall Refining Company of Chicago is now selling motor oil in gallon plastic jugs. They have named the item "Dispose-A-Jugs" with the idea that, being once empty, the container can be filled with the used oil. Kendall is also offering a recent publication which they have produced entitled "How To Change Your Own Motor Oil." The booklet contains handy tips on how used oil may be utilized in a manner that won't contaminate. . . i.e., protecting fence posts, controlling unwanted vegetation, dust suppression on roads, etc. Check with your nearest Kendall dealer.

It seems that each year a number of events always occur earlier than they did the year prior. Perhaps I am just imagining that to be the case, but others will tell you the same thing. Take any school child, for example. He will tell you right off that "school starts earlier every fall, sure enough." For me it is an earlier snow fall, a Christmas which has somehow arrived unannounced, and I haven't done my shopping, or something. Take this month of September, for example. How did it get here so soon? Wasn't it just last month that the Spring plowing was finished? Anyhow, September is here and it will soon be time for heating again. In that regard, you might be interested in two pamphlets produced by VPI in Blacksburg, especially if you burn wood. These publications aren't new, but for some reason I just ran into them. "Cutting Firewood-Proper Use of The Chainsaw" was authored by



Marshall S. White. It is just three pages long but it is filled with good solid information, including subtitles on Felling, Limbing and Bucking. The other pamphlet, "Home Seasoning and Storage of Firewood," was written by Eugene M. Wengert. Only a one-pager, but I'll bet that you would benefit from the wisdom contained therein. Write to the Virginia Cooperative Extension Service, Virginia Polytechnic Institute and State University, Blacksburg VA 24061.

Back in 1976 a Symposium on Wildlife and America was convened in Washington D.C. As a result of this gathering, some forty authors have contributed to what has become "Wildlife and America," a 500-plus page publication, edited by Howard P. Brokaw, from the Council on Environmental Quality. The publication is, as it was intended to be, a source book of philosophy and fact dealing with the problems and symptoms of the nation's wildlife problems. Send a self-addressed mailing label to Council on Environmental Quality, 722 Jackson Place, N.W., Washington D.C. 20006.

### ... FOR YOUR BOOKSHELF

Although it was produced mainly for folks that live in the Northern Virginia area, it seems to me that more than just a few of our readers

venture into that geography frequently. . . so I think that you would like to know that "Happy Trails" is now available to you. It is the Northern Virginia Regional Park Authority's guidebook to its 52-mile system of trails for persons planning to hike, bike, stroll or even ride ole dobbin. Photos and a map of each trail are included along with directions to get there and phone numbers if you need help or directions. Friends, you can't beat the price, \$1.00, if you pick up the publication at any of the parks, and just \$1.25 by mail from the Northern Virginia Regional Park Authority, Dept. C, 11001 Popes Head Road, Fairfax, VA 22030.

It really isn't too early to consider what you will do with your deer come the time that you drop it in November. For the incredible, these days, price of one buck (\$1.00) (*no pun intended!*) you can purchase "Butchering and Handling Your Deer" which will provide you with some really vital tips which you may have overlooked. Send your request to Outdoor Enterprises, Box 303, R.D. 1, Downingtown, PA 19335.

### ... AND THEN

At this point we usually attempt to come up with some sort of down-to-earth saying or such. However at this time I would like to put in a plug for the wild turkey, instead. There is available to each and every one of us a chance to contribute the sum of \$3.00 for a stamp which has been produced by Ken Carlson and which won first place at the Wild Turkey Federation's annual contest in Augusta, Georgia. Those of us that purchase the stamp will be contributing to the education, restoration and research which will continue the successful return of this great bird. Send your contribution to NWTF, PO Box 467, Edgefield, S.C. 29824.





# Military Waters

## The Fisherman's Pot of Gold

By Gerald Almy

With a savage lunge that only a large chain pickerel could muster, the toothy green fish attacked the silver spoon wobbling through the tea-brown water. Jerking its head sideways when the hook drove home, the lanky fish raced toward the opposite end of the weedy pond. Thirty feet out, he changed tactics and began a head-thrashing battle close to the boat. Several precarious minutes later, Jim Bristor netted the full-bodied three pound pickerel. After snapping a few quick photos, the fish was released into the darkwater pond — our ninth pickerel of the day.

And pickerel were but part of our tally. Moments

earlier, next to a partially-submerged brushpile, my orange and yellow bobber had edged slowly beneath the surface. Setting the hooks hard with the light graphite spinning stick, we were greeted with the sight of a 3½ pound largemouth churning the brown water to a froth. Three other slightly smaller bass were pulled from the pond before the day was out.

And there were panfish, too. In the shallows where the winter sun had warmed the water, we dropped tiny rubber spiders next to the shoreline with light fly rods. Chunky bluegills and fat fliers tore into the soft bugs with a vengeance. By quitting time, over a dozen were



*Author Gerald Almy pulls a pickerel from the waters of A.P. Hill.*

## The high-quality fishing in these waters is easily accessible to most Virginia residents.

gracing our stringers. In deep water, where we drifted for pickerel, two plump crappies also decided that the wriggling minnows were to their liking.

Sound like an exclusive private pond off-limits to the average angler? It wasn't. This fishing trip took place on a recent winter day in one of the fine waters open to public fishing on Virginia's military reservations. And the catch really wasn't all that unusual. To be sure, it was a good day. But we've enjoyed many such fishing forays on these military ponds and lakes. To my mind, they offer some of the best fishing in the state, and most of it is centrally located for easy access by the majority of residents in Virginia. If you've been looking for new waters to explore, these lakes, ponds, and reservoirs may be just the answer.

The three major reservations where public fishing is available include A.P. Hill, Quantico, and Pickett. A.P. Hill is located southeast of Fredericksburg and is reached by taking US 17-2 from I-95. Quantico is located just north of Fredericksburg and access is via the Quantico Marine Base Exit off of I-95. To reach Pickett, take Rt. 460 from Petersburg to Blackstone. A left on 40 (east) leads to the reservation.

Cheatham Annex, reached by taking I-64 east from Richmond to the Williamsburg exit, also offers two public fishing waters — Jones Mill Pond (69 acres) and Cheatham Lake (107 acres.) Phone reservations are suggested here, however, and the number is 804-887-7101.

There are lakes, ponds, reservoirs, and a few streams stocked with trout open to public fishing on these military bases. The major species of gamefish available include bass, pickerel, crappie, and bluegills. Fliers, catfish, and trout are also present in some of the waters. All told, there are some 21 lakes and ponds open to the public, ranging from tiny lakes to 670 acre reservoirs.

On Quantico a \$2.00 annual permit must be acquired to fish on the base waters. All of these funds, however,





*Hand-sized bluegill are not an uncommon catch during the winter months.*

go toward fish stocking and management. On A.P. Hill and Pickett fishing is free, but a permit must be obtained from the wildlife resources offices.

There are a number of explanations as to why the fishing on Virginia's military bases is of such topnotch quality. One obvious reason is that the bases are spared the residential, commercial, and industrial development that degrades water quality and destroys game-fish populations. The ponds and lakes on the bases are, almost without exception, clearwater gems.

Another reason why the fishing is good is that the ponds are carefully managed by trained fish and wildlife personnel. Creel cards must be filled out by all anglers using the lakes to enable biologists to monitor the size, abundance, variety and growth rates of fish and to determine where stocking or changes in fishing regulations are required. There is a 12 inch bass limit imposed on the waters and signs urge anglers not to return small panfish to the water, to keep them from overpopulating the lakes and disrupting the ecological balance of bass, pickerel, panfish, and forage species. On Quantico's waters live baitfish may not be used to prevent the introduction of unwanted species in the lakes.

One final explanation for the high-quality angling found in the military waters is their general neglect by the majority of Old Dominion sportsmen. On some of these backwoods ponds fishing pressure is virtually non-existent. On others, it's only a fraction of the angling effort the waters could withstand — and still provide a satisfying fishing experience for everyone.

The result of these factors (protection from harmful development, careful management of the resource, and lack of fishing pressure) make for exceptional angling. An example: Northern Virginia is not an area noted for producing gargantuan bass, but in 1977 the biggest bucketmouth in the state — a 12½ pounder, was pulled from the icy waters of Lunga Reservoir on Quantico. The date was February 22. Each year this 670 acre lake produces at least a few citation-sized (eight pound) largemouths.

In some of the ponds scattered throughout A.P. Hill, pickerel in the three to four pound class are encountered on a regular basis. Fliers in the half pound range and crappies pushing three-quarters of a pound are not exceptional catches on the military waters.

If you're interested in fishing these military waters, here are a few tips gleaned from many years spent



probing their shorelines and deepwater pockets. Timing is often critical. With the exception of a few of the big reservoirs, many of these lakes become choked with weeds and virtually unfishable during summer months.

The best time for hitting most of the waters is from fall through spring. You'll have the lakes almost totally to yourself at this time, and many of the shallow sections of the ponds will see heavy feeding activity on warm, sunny days in winter and virtually any time during spring and fall.

Pickerel, especially, feed well during these cold weather months. Though I've taken fish through the ice on these ponds, most of them remain open for the bulk of the winter. On A.P. Hill, where minnows are allowed, I like to drift in deep water with a bobber fastened three or four feet above a frisky shiner.

In addition to minnows, silver spoons with a pork rind attached are excellent pickerel lures. A fast retrieve is usually recommended, but there are times when a moderate or even slow motion retrieve is preferable. Experiment to determine the whims of the "jack pike" on the particular day you're on the water. Rebels and Rapalas also take fish, with the jointed models outfishing standard versions in most cases.

Though few anglers realize it, winter is often a good time to catch largemouth bass — witness the 12½ pounder caught at Quantico's Lunga during one of the coldest winters in history. On the smaller ponds and lakes on the military lands, bass prospects are even better because the shallow water warms up more quickly during those spates of spring-like weather that come periodically each winter. These are the times to hit the ponds for bass.

On Bowie's Pond, nestled on the southern edge of A.P. Hill, a fishing crony and I once took bass on fly rods during just such a late January thaw. The fish were far back in the weed beds where the water was merely a foot or two deep. They lept onto deer hair bugs with abandon.

More typical is a trip Angus Phillips and I took to another military pond in early March. The day was cold and gray and a biting northeast wind blew a fine, wet mist in our face throughout the afternoon. But still we managed to corral a mixed bag of pickerel and largemouths up to two pounds on live minnows, silver spoons, and Rebels crawled slowly through the shallow arms of the lake.

**T**his is one of the great thrills of fishing the military waters — you never know whether a largemouth or "pike" will inhale your bait on any given cast. The same fishing techniques will usually draw a mixed bag of both species.

As spring warms the waters more, plastic worms can be deadly for bass. But if the pickerel are in a biting mood that day, you'd best switch lures. They'll tear the soft lures to shreds in short order and you'll spend the day constantly re-rigging new worms on the hook.

For both pickerel and bass, a light spinning or casting rod with six to ten pound line will prove capable of

handling most fish encountered. And don't worry about wire leaders for the chain pickerel: they aren't necessary. Of hundreds of pickerel caught over recent years, I can think of only two or three that shredded the thin mono with their teeth. It's wise to check your line for wear after catching a "pike" or two, but wire leaders simply inhibit the action of lures and bait, reducing strikes.

**P**anfish probably draw as many anglers to the military lakes as bass and pickerel. Most of the waters have ample quantities of bluegills and crappies; several also host good populations of fliers, a little brassy gem most angler's rarely encounter.

For crappie, minnow fishing beneath a bobber is the method of choice. In the winter, drift in water from four to 12 feet deep. As spring approaches, cast your rig to brushpiles close to shore where the fish congregate to spawn. Small marabou jigs fished beneath a bobber will also take the crappies.

For bluegills, worms fished with a bobber are a standard and effective bait. I rarely use anything but a fly rod anymore, though. Without having to stop and bait your hook, you can easily catch more gills with tiny poppers than with worms — and have more fun doing it.

Use the smallest cork bugs and rubber-legged spiders you can find and cast them on a two or three pound tippet towards shoreline cover. Fast action lies in store for you with this approach. During late winter and spring it's not at all unusual to take 50 or 60 hand-sized bluegills using the long rod. Simply drop the fly to the water, let it sit for several seconds, then give it one or two light twitches. If a strike doesn't come, pick the bug up and drop it a foot or two further down the shoreline.

Fliers are catholic in taste — you'll take these fish with just about any method. Probably, the majority come when fly fishing for bluegills. However, I've seen these spunky little battlers slam into bass plugs and wolf down minnows three inches long.

Since all of the military waters are found in Piedmont or tidal portions of Virginia, trout aren't a common species. However, they are present in limited numbers on Quantico Marine Base. Chopawamsic Creek and Breckenridge Reservoir are the two places where stocked rainbows are likely to be encountered. A Joe's Hopper dry fly in sizes No. 12-16 is especially productive on the trout.

It should be noted that these military waters are not the place to go if you only like fishing from a powerful bass boat with a 150 hp motor. In fact, 10 hp is the limit on these small lakes and reservoirs. This is more than enough power to fish them effectively, and on many of the ponds you'll need nothing more than a pair of oars or an electric motor.

And for those of us who favor small, secluded ponds where we're more likely to run into a beaver than a water skier, this is one of the major attractions of fishing the military waters.

They're quiet.



# Outdoor Notebook

## It's a Bird!

From October to May, Main Street in downtown Norfolk sometimes resembles the opening scene in old Superman shows. Out-of-town visitors and local workers stare skyward, shielding their eyes from the sun. You can almost hear someone declare, "Look! Up in the sky — it's a bird, it's a . . ."

Stop there — it is a bird, and certainly worth the commotion. For two years, a peregrine falcon has made his winter headquarters on the 22nd floor logo of the tallest downtown bank. Birdwatchers from all over the East Coast have flocked to catch a glimpse of the powerful, swift bird.

The falcon isn't there to open a bank account. But it does make periodic, spectacular withdrawals from the city pigeon supply.

The presence of such a rare bird has stirred up quite a bit of excitement. The Associated Press carried a story, and a local newspaper has run a series of articles. For the host bank, this coverage is a public relations man's dream, of course. But the publicity has helped enlist support and concern for this falcon, and, ideally, for endangered species in general.

Local people pitched in to make the falcon feel at home. Joe Lovering (a bank vice president) and David Hughes (head of the Cape Henry Audubon Society) built a pair of sturdy nesting boxes, should the bird find a mate. In 1977, watchers regularly sighted two falcons. But last year's resident remained solitary.

These boxes were installed on top of the building by two daredevil scientists from the Cornell University Laboratory of Ornithology's Peregrine Fund. Other volunteers put gravel in the boxes, and installed an awning to shade them from the direct sun. Although there is heating and cooling machinery on the roof, security is strict. Nesting birds should remain unmolested.

The City guaranteed it wouldn't



poison pigeons while the falcon was in residence, to make sure it doesn't latch onto a toxic dinner. The falcon hunts throughout Tidewater; grain elevators, for example, are a favorite spot. It would take several squadron's of dive-bombing falcons to put a dent in the city's pigeon population.

Cornelius Sullivan has an office in the bank, and helped identify the falcon. He keeps a log of the bird's peregrinations, and says he sees it "almost daily" during its annual visits. Sullivan's record shows arrivals on October 10 and 17, and departures on May 4 and 5, for the two years.

The falcon probably noticed the skyscraper during its annual migration down the coast, and figured it offered definite cliff-like advantages. It may have paid several visits before deciding to settle in. Sullivan says he thought he had seen a peregrine downtown as early as November 1970. This suspicion was confirmed by an article in a Virginia Ornithological Society magazine which reported a similar sighting by a pedestrian on Main Street at the same time.

Last year, an article in the Los Angeles Times pointed out a peregrine had nested on a bank building

in downtown Baltimore. The article said falcons had been identified as skyscraper residents in Chicago, New York, Boston, Philadelphia, and Harrisburg. A recent national newscast mentioned that Boston's falcon had produced eggs, which scientists successfully replaced with live young.

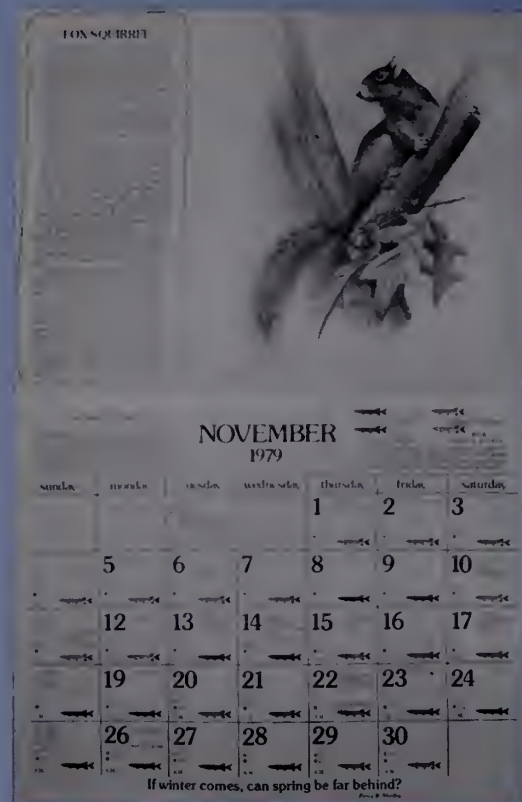
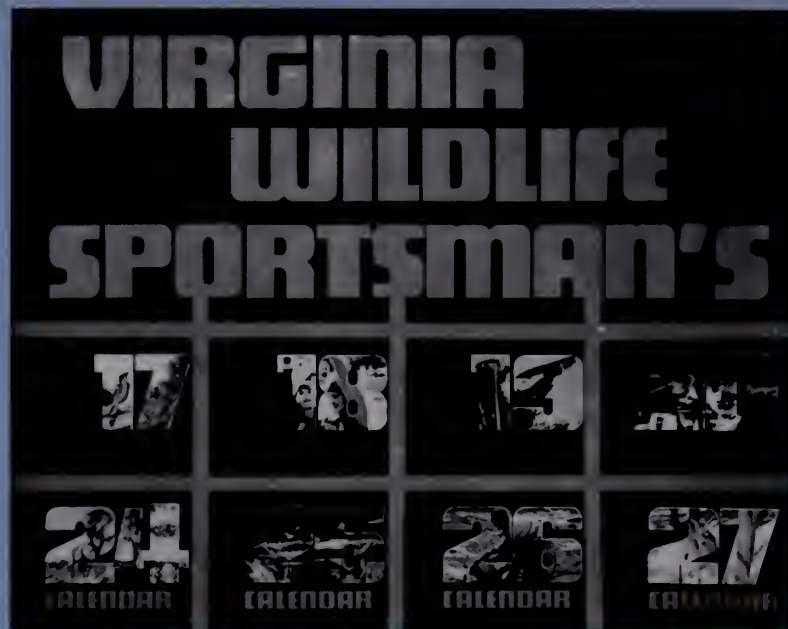
Peregrines were plentiful in the 1930s, before DDT and similar pesticides pushed them to the edge of extinction. A famous pair nested on a New York insurance building for fifteen years.

Nowadays, the only "wildlife" most urbanites glimpse is limited to squirrels and sparrows. The vision of a peregrine is like the taste of wild asparagus after a diet of fast-food burgers.

Is the falcon's newest experiment in high-rise living a cause for optimism? Or is it merely a desperate attempt to adapt to an increasingly tainted, foreign world? Those who love wildlife hope it can stand the air pollution and the glare of public attention. They trust it won't get shot or poisoned.

I'm rooting for the falcon. And come October, there will be a lot of early morning skywatchers in downtown Norfolk, waiting and hoping for another glimpse.—Derek Nelson

# Time is running out.



Our supply of the *Virginia Wildlife Sportsman's Calendar* is running low — and it's not hard to see why!

Maybe it's the twelve beautiful prints just perfect for framing. . . or the daily key to the best times to hunt and fish. . . or the tide information for each and every day in the

year. . . or the accurate hunting and fishing season information. . . or the notes for the naturalist, such as bird nesting and migration times. . .

Since the calendar has already started with September, don't put off another day ordering your beautiful, full-color calendar.

Send your check for \$2.00 for each calendar payable to the Treasurer of Virginia *today* to: Sportsman's Calendar, P.O. Box 11104, Richmond, Virginia 23230.

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# 1979 Big Game Trophy Contest

As in past years, the Big Game Trophy Contest will get underway next month.

The contest is divided into Eastern and Western Regions, with both competing in the State Finals held on the same day as the Eastern.

Deer heads must be physically present. The Virginia Game Commission, along with the names listed beside each division, have information as to specific rules and scoring methods.

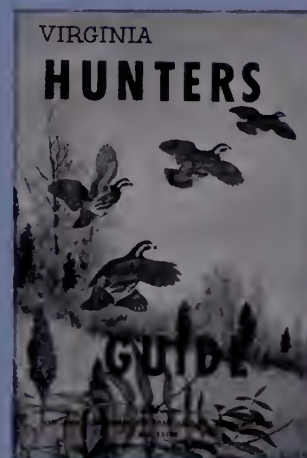
The State Finals will also be held at Deer Park Elementary School on October 20. It should be noted that the entrant must have his Big Game Tag, certifying that the deer was a legal kill.

Eastern Region:  
10:00 a.m., October 20  
Deer Park Elementary School  
Newport News, Virginia

Western Region:  
October 5-6  
Auto Auction Building  
Harrisonburg, Virginia  
Entries must be received  
by 12:00 p.m. Saturday

Contact:  
James S. Harvey  
126 Kerlin Road  
Newport News, Virginia 23501

Contact:  
Larry Dickenson  
P.O. Box 1335  
Harrisonburg, Virginia 22801



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by Ronald J. Kendall

How do environmental  
contaminants affect the  
health and well-being of wildlife?

# WILDLIFE

**W**ildlife toxicology is the study of the effects of environmental contaminants on wildlife species as related to their reproduction, health and well-being. These poisons include such materials as pesticides, heavy metals (cadmium, lead and mercury) and organic contaminants such as PCB's. (Polychlorinated biphenyls) Wildlife are exposed to these hazardous materials and scientists at Virginia Polytechnic Institute and State University are currently working on new approaches to determine the biological significance of this exposure.

Wildlife have been monitored for environmental contaminant exposure for many years. Volumes of information have been produced providing tissue residue levels (generally expressed as parts per million, ppm) of various pesticides, heavy metal and PCB's. But what does it mean for bobwhite quail to have 2 ppm pesticide in its breast muscle or 20 ppm in fatty tissue? Could these levels of toxin be affecting reproduction or even be lethal? The intergration of field and laboratory research allows us to gain more insight into the problem and to have some control over our experimentation.

For instance, we may have an idea that a soybean pesticide could be killing bobwhite quail which inhabit the borders of treated fields. To find dead quail resulting from pesticide exposure in the wild is almost impossible in that sickened wildlife generally hide themselves or immediately fall prey to an awaiting predator. So, collection of quail from the field area before and after spraying of the pesticide would be necessary. Analyses of various tissues or some other index of toxin exposure (enzyme assays) could be used to determine levels of pesticides in animals before and after exposure. This would give us a good idea on what would be normal versus elevated tissue pesticide levels. If any animals were possibly found dead in the treated area they would be extremely valuable from the standpoint that information would be provided on lethal levels in the field. In the laboratory, all field-collected specimens would be sexed, aged, weighed, stomach contents identified, and date and place of collection recorded. From this data base, some decisions could be made on the approach needed in laboratory investigations.

In our hypothetical example, the soybean pesticide spraying would be seasonal (summer and early fall) and would most likely constitute an organophosphate. Al-

though this is often a very toxic form of insecticide its degradation (loss of toxic action) in the environment occurs very quickly and buildup of residues in food chains is not likely. Therefore, utilizing bobwhite quail raised in captive colonies, we would probably want to investigate the effects of organophosphate doses given to quail over a short length of time. Using preliminary experiments we would determine how much oral administration of the pesticide would result in tissue levels comparable to field-collected animals. Bobwhites are insectivorous and probably show high exposure to the insecticide by eating poisoned insects. We could set up experiments with quail to receive oral doses of pesticides below, at and above levels detected in field collected animals. We would make evaluations on the number of deaths (correlated with tissue pesticide levels), number of sickened animals, types of toxic symptoms (nausea, trembling etc.) and percentages of animals which experience toxicosis at all levels of treatment. From this type of controlled laboratory information we would be in a much better position to evaluate toxic versus nontoxic levels of the insecticide for quail.

Although there are limitations, we do have the capability to determine the significance of bobwhite quail possibly ingesting insects which have just been poisoned during a soybean insecticide application. As mentioned earlier, this type of information would be very difficult to obtain if the approach just entailed field investigations. If pesticide spraying was determined to be toxic to bobwhites, management plans might entail reduction of insecticide treatments or switching to a form of insecticide less toxic to birds. Of course we would need to consider other animals receiving toxic exposure as well as the need to control crop damaging insects. Again, an integrated approach to the problem comes a lot closer to providing answers than field or lab studies conducted independently.

The chlorinated hydrocarbon insecticides (DDT, mirex heptachlor) are stable in the environment, allowing biological magnification (buildup in food chains) and require a different approach. First, field monitoring of the pesticide levels in animal tissues is important. Mirex, for instance, has been used extensively over the southeast for fire ant control and has been detected in bobwhite quail. Although some studies showed that quail did not receive lethal short-



# TOXICOLOGY



term (application rates are generally low) doses of the pesticides they were exposed to it throughout the year due to environmental stability of mirex. Furthermore, insects in general showed high levels of mirex and, since quail are insectivorous during the breeding period, their exposure potential to the insecticide was increased. Since we are dealing with continuous pesticide exposure, the approach in the lab would be to determine the effects of this pesticide on reproduction, a process oftentimes sensitive to long-term exposure to contaminants. Other chlorinated hydrocarbons have been shown to adversely affect reproduction in birds, so mirex was somewhat suspected in this sense.

Breeding pairs of bobwhites were established in a controlled laboratory situation and received oral administration (via food) of the pesticide at levels below, at, and above those detected in the field collected bobwhite quail. Mirex was investigated over two generations of bobwhites and this pesticide was found not to impair reproduction. This kind of information would have been difficult if not impossible to obtain in a field experiment. Although mirex did not seriously affect quail reproduction there was a great deal of concern about its long life as a toxin in the environment. For this reason it has been banned from further use.

To evaluate as completely as possible the biological significance of environmental contaminant exposure in wildlife it is imperative that we consider different

forms of stress (starvation, cold), nutrition and age interacting with the toxic effects of contaminants. For instance, we know that birds in general can store high levels of chlorinated hydrocarbon pesticides in their fat deposits but during a starvation period these poisons can be released into the system due to fat utilization. This rapid buildup of toxins in the blood stream can result in death.

I used bobwhite quail exposure to organophosphate insecticides as an example to demonstrate a philosophy of thinking. The chlorinated hydrocarbon study with mirex was actually conducted and stands as testimonial to the field and laboratory approach. I hope that the broad applications of this method will be realized. Studies could have just as well been performed with other contaminants using deer, raccoons, rabbits, doves, or just about any wildlife species. Nongame animals are beginning to receive more attention and rightfully so in that they play important roles in the ecosystem. Wildlife toxicology is a relatively new discipline in the field of wildlife management and this effective study technique is just beginning to receive attention.

Environmental contamination is a manmade problem, yet we can do something about it. The quicker we can understand how these contaminants are affecting our wildlife the more efficiently we can make adjustments to curtail the sources of contamination.







# The Great Horned Owl

The largest, strongest and most regal of the owls are classed under the genus *Bubo*, and are known as horned owls or eagle owls. (The word *Bubo*, is thought to have derived into Latin from the Greek *buas* meaning a tufted or horned owl.)

Ornithologists generally agree that there are twelve species of *Bubo*, found nearly the world over, together forming an almost completely cosmopolitan distribution. They are absent only from the treeless Arctic and from certain of the Pacific Islands.

Of the twelve, perhaps the most widely distributed is our great horned owl, *Bubo virginianus*. It occupies the whole of North and South America, ranging through a broad spectrum of habitat. It lives in the boreal forests of the north, in deciduous woodlands, the rainforests of the Amazon basin, in deserts, and in the high mountains of both continents.

In such a wide-ranging species, there are the expected differences in size and color. Following the usual pattern, the largest birds are in the northern latitudes and highest altitudes, the smallest in the tropics and desertlands. In the humid tropics they are darker and more richly colored than the pale birds that live where snow lies much of the year.

Throughout its range, the great horned has suffered heavily from persecution at the hands of man. Since colonial times, it has been shot, trapped and hunted by farmers, sportsman, gamekeepers and even by some naturalists. That it has survived at all is a tribute to the species — to its strength and sagacity.

In earlier times, when every farm had a backyard chicken house, most of the farmers had an eye out for the great horned. Those owls that weren't shot were trapped. They are easily decoyed by chicken feathers piled atop the deadly jaws of a steel trap, and few were the poultry houses without such traps. Often the owl would manage to fly away with the heavy trap dangling, to die a lingering, painful death back in the woods.

Many sportsmen have long resented the predatory habits of *Bubo*. Small game mammals, notably squirrels and rabbits, are the chief foods of the owl, and the assumption followed, that if the owls were eliminated, there would be more game for the hunter.

Great horneds have also been persecuted by those who run game farms, hunting preserves, zoos and

aviaries. The presence of captive or flightless birds, especially waterfowl, provide an irresistible temptation to the great horned.

For *Bubo* has a ravenous appetite, and with its size and strength, it has a wide choice of prey. And when times are good, it may even take more than it needs, eating only the tastiest parts.

Even with such a varied menu, the owl prefers small mammals whenever circumstances allow. In the boreal forests of Canada, varying hares comprise more than ninety percent of its diet, and in the eastern U.S., the cottontail plays a similar role. Squirrels, rats and mice, woodchucks and opossums are among the mammals most frequently taken, along with bats, weasels and skunks.

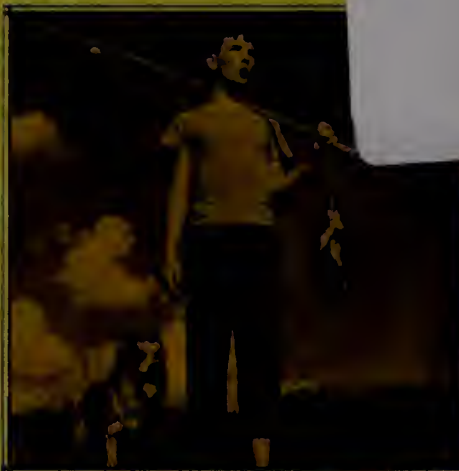
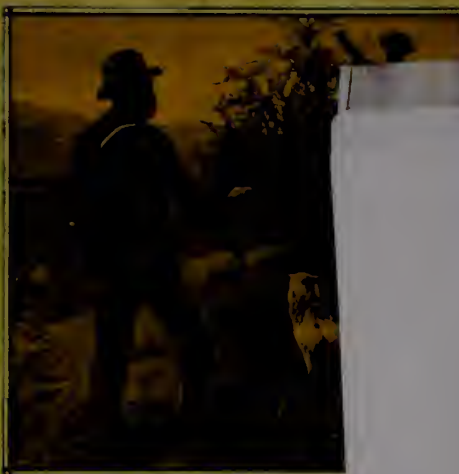
Indeed, many great horneds smell strongly of skunk, even after they have long been made into museum specimens. Many nests of the bird take on the same pungent smell, the presence of the odor being a definite indication that the nest is an active one.

When the great horned preys on other birds, it is most likely to during times of stress, when its favored food is not available, or if the prey is crippled or otherwise hindered. Few birds are abroad at night when the owl goes hunting. Where there are large flocks of ducks and geese, there is often a great horned in attendance, taking advantage of the weakened or injured among them.

Some great horneds seem to acquire a taste for grouse, especially in New England where these game birds are most common. Elsewhere, grouse are seldom abundant enough to play an important part in the owl's diet.

Wherever it lives, the great horned is essentially a year-round resident. There seems to be little tendency to migrate, except from the extreme northern portions of its range. In the autumn, individual owls form attachments to old stick-nests (crow's and hawk's), in anticipation of the coming nesting season, which begins in the depths of winter. (The great horned is our earliest nesting species.)

In Virginia, eggs have been found as early as January 12, though in these latitudes, February is the usual month for breeding. Young birds may be on the wing by early April, but are still in the care of their parents. Often, the youngsters may follow the adults about for most of the summer.



SEPT. 22, 1979

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